

CUTANEOUS

NERVE SUPPLY

JACOB HEIBERG

W. W. WAGSTAFFE

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A T L A S
OF THE
CUTANEOUS NERVE SUPPLY
OF THE HUMAN BODY.

BY
JACOB HEIBERG, M.D., ETC.,
PROFESSOR OF ANATOMY AT THE UNIVERSITY OF CHRISTIANIA, NORWAY.

ILLUSTRATED BY
ALFRED FOSTERUD.

TRANSLATED AND EDITED, WITH ANNOTATIONS, BY
W. W. WAGSTAFFE, B.A., F.R.C.S.,
LATE ASSISTANT SURGEON AND LECTURER ON ANATOMY AT ST. THOMAS'S HOSPITAL, AND
LATE MEMBER OF THE BOARD OF EXAMINERS AT THE ROYAL COLLEGE OF SURGEONS.



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INTRODUCTION.

THE value of such an atlas as Professor Heiberg has brought before the public has been impressed upon me by a long experience of teaching anatomy, and the method in which the subject has been treated by the distinguished author recommends itself equally to teacher, student, and practitioner. It is very difficult to see the limits of nerve distribution in the diagrams, which are intricate in proportion to their accuracy, and it is intended by the use of coloured areas to make this distribution at once obvious. This plan has an advantage over the outlined areas which have been given in some works, and will, it is hoped, make the diagrams more practically useful.

Of course, nerve distributions vary somewhat in different subjects, but the author's delineations are claimed by him to have been verified by actual dissections in all cases, and they correspond with the observations of other authors, English and German. But the blending of nerves from adjoining areas is purposely omitted, so as to render the plates clearer. Still, this fact must not be forgotten by the student. He will find the plates useful, it is hoped, even in his dissection, but they are intended as helps, and not in any way to supplant his more important practical work. They will give him help where it is generally difficult to carry his dissections minutely enough to learn for himself. They may also induce him to test their accuracy, and serve a good purpose in this way.

In the out-patient room and wards, the usefulness of such diagrams in a portable form will be recognised, and it is especially here that this want has been felt, for teachers and students alike. There are few diseases involving the skin where pathology may

not have some light thrown upon it by a knowledge of the local nerve distribution: and this applies as much to eruptive and inflammatory diseases as to those in which pain is the predominant symptom; and a knowledge of the pathology of such lesions is the most important stepping-stone to successful treatment. Even in injuries involving the skin, the local nerve supply may be a guide to treatment, and the clinical teacher will make use of such knowledge in directing his class.

To those who are engaged in the scientific practice of their profession, I have felt that these plates would be of practical use, for a scientific practice of their profession is only honest clinical work extended. Obscure cases may be elucidated by referring the areas affected by certain diseases to the source from which the part receives its nerve supply, and this knowledge is not readily obtainable from text books. Here it can be recognised without difficulty: And it is of importance to the practitioner to have some such means of ready reference as these plates are intended to supply.

In the letter-press attached to each plate, I have left the remarks, as far as possible, in Professor Heiberg's own words, but have added what seemed to me necessary notes of explanation with the indication of "note."

The difference in nomenclature between English and German anatomists has necessitated careful correction of the letterpress, and I have added a few notes with the intention of making it clear to English readers where any doubt seemed likely to arise. But the plates have been left with the Latin names, which are comprehensible by most readers, and the list of synonyms will explain the term more fully. I have marked in large type the names used in the plates and those used in our English Schools of Anatomy. Those on the plates are generally those adopted in German Schools, and where these differ from our own nomenclature some indication will be found in the letterpress attached to the plates.

It has seemed of more importance to make clear the limits of distribution of the particular nerves than to group the nerves

according to their source from different plexuses. This would have reduced the value of the colouring in many parts by making the areas of uniform colour too extensive, but some idea of such grouping may be obtained from the general plates I. and II.

The use of colours in simplifying the study of anatomy is urged by the author as a practical advantage, and it may be adapted further in a way which will recommend itself to teachers—by colouring in a similar manner plaster casts of the human figure and using them for purposes of demonstration and to assist the descriptions given by the lecturer.

It has been my wish to introduce what I believe to be a thoroughly reliable and useful atlas of nerve distribution to the English student and practitioner, and the credit of the work entirely belongs to Professor HEIBERG and to his accomplished artist, ALFRED FOSTERUD. I shall feel gratified if I may have been the means of bringing within the reach of English students the latest work of a distinguished fellow-worker in anatomical science.

W. W. WAGSTAFFE.

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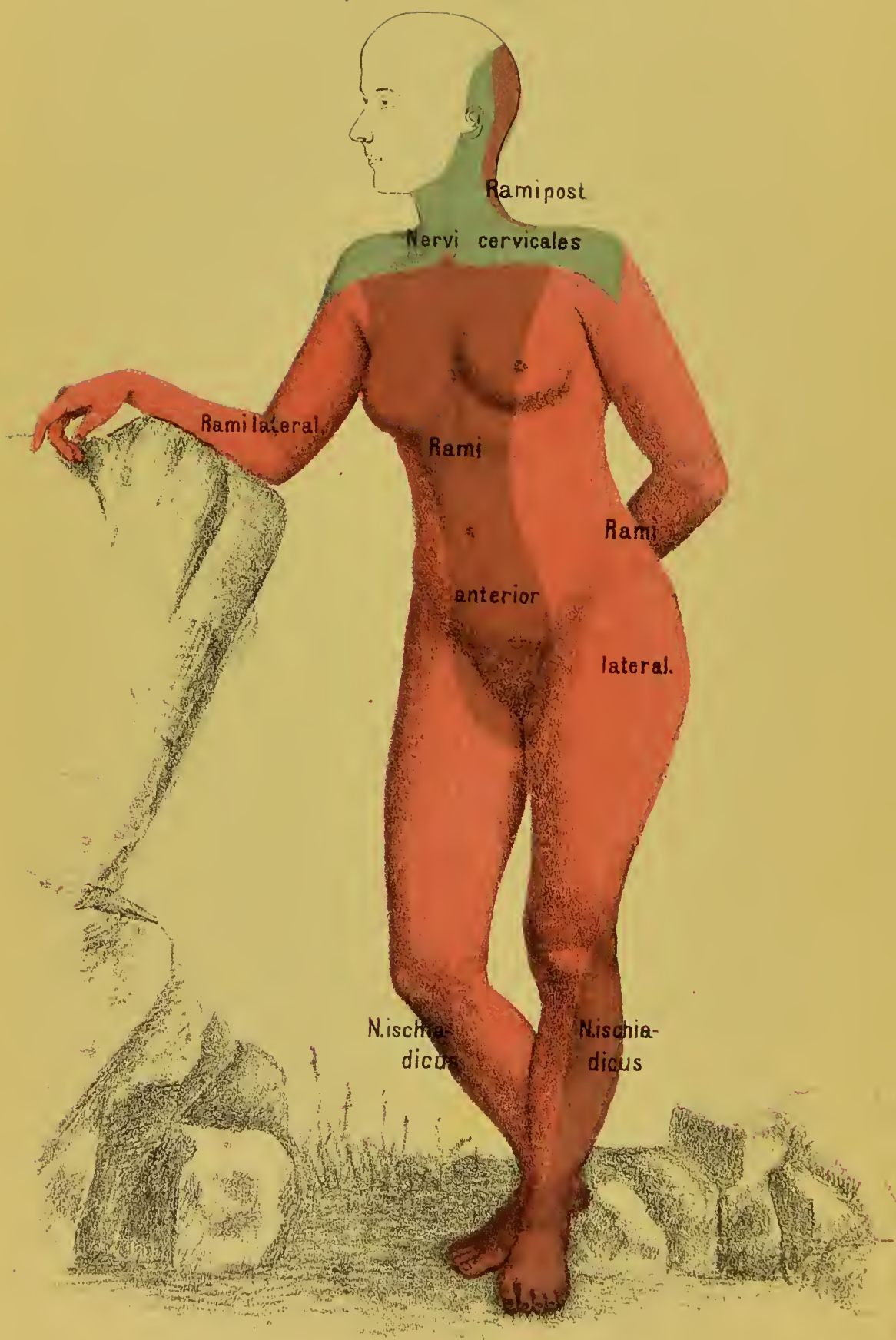


PLATE I.

The anterior surface of the whole body.

THREE nerve territories exist for the entire body—one anterior, one lateral, and one posterior. Of these three the lateral is the largest to each half of the body. On the neck there is no distribution of lateral branches, but only anterior and posterior.

The line of demarcation between anterior and lateral generally divides the breast into two equal halves. The distribution of the anterior branches extends on to the front of the thigh.

The genitals, with the exception of the outer surface of the labia majora and scrotum, are, however, supplied from the posterior branches, viz.: the **pudic**, but this is not shown in this plate.

The arm is seen to be entirely supplied by the lateral branches, while the **great sciatic (N. ischiadicus)** is seen to be distributed on the surface of the leg. In the Plate the Great Sciatic is depicted as a posterior branch, and by this means can be indicated roughly the distribution of the anterior branches (**obturator, anterior crural, and saphenous nerves**) distinctly from the posterior.

Note.—It must be borne in mind that the anterior and lateral cutaneous nerves of the thorax are branches from the same nerves. But the distribution of these terminal branches is conveniently indicated by the difference of colour.

SYNONYMS.

N. pudicus. **N. pudendo-hæmorrhoidalis.** **N. pudendo hæmorrhoidalis communis externus.** **N. pudendalis communis.** **N. pudendus communis.**

N. obturatorius. **N. Cruralis internus.** **N. cruralis posterior.**

N. cruralis. **N. femoralis.** **N. cruralis anterior.**

N. saphenus. **N. saphenus internus seu major.** **N. cutaneus internus femoris major.**

N. ischiadicus. **N. ischiadicus magnus.**



PLATE II.

THE large violet-coloured area shows the distribution of the posterior branches of the spinal nerves. A fuller representation of the extent of surface supplied by the great occipital nerve is to be found in Plate IV.

The lower limit of the posterior branches of the dorsal nerves may be taken to be roughly indicated by the crest of the ilium and side of the sacrum. Below this, the similarly coloured area represents the distribution of the **small sciatic** and the **external** or **short saphenous**, with so much of the **musculo-cutaneous** as supplies the skin of the foot.

The outer limit extends to the spine of the scapula.

The area marked **cervicalis** shows the distribution of the anterior branches of the cervical nerves.

The upper extremities are coloured red, as they are entirely supplied by the lateral branches of the anterior spinal nerves.

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PLATE III.

The head and face—anterior view.

THE cutaneous nerves of the front of the head and face arise from the **Trigeminus** or **Fifth Nerve**, whose three divisions have a different and unequal distribution.

1. The **first**, or **ophthalmic**, supplies the ball of the eye with sensory branches, and by the frontal, supra-trochlear and supra-orbital supplies the whole of the skin of the forehead and crown of the head as far as the lambdoidal suture. The infra-trochlear nerve, a branch of the naso-ciliary, and the lacrymal, are distributed to the upper eyelid, and the ethmoidal branch of the naso-ciliary to the bridge and tip of the nose.

2. The **second**, or **supra-maxillary**, supplies the lower lid, the greater part of the cheek and of the side of the nose, and the whole of the upper lip. The branches are the infra-orbital, the inferior palpebral, lateral, nasal, and the upper labial.

3. The **third** or **infra-maxillary** supplies the lower part of the face, corresponding nearly with the lower jaw, and by the *auriculo-temporal* branch is distributed to the front part of the ear and the skin of the adjoining temporal region.

Note.—The lateral limit of the **first division of the fifth nerve** is about the edge of the temporal fossa.

The posterior limit is not given so far by some authors.

SYNONYMS.

N. ophthalmicus. N. orbitalis.

N. supra-orbitalis. N. frontalis.

N. supra-trochlearis. N. fronto-nasalis.

N. naso-ciliaris. N. nasalis. N. naso-ocularis. N. oculo-nasalis.

N. ethmoidalis. N. nasalis anterior. N. nasalis internus.

N. supra-maxillaris. N. maxillaris superior.

N. orbitalis. N. subcutaneus malx. N. orbitarius. N. temporo-malaris. N. zygomaticus.

Nn. nasales subcutanei. Nn. nasales laterales. Nn. nasales superficiales.

N. infra-maxillaris. N. maxillaris inferior. N. crotaphitico-buccinatorius.

N. auriculo-temporalis. N. temporalis superficialis. N. temporalis cutaneus. N. auricularis anterior.

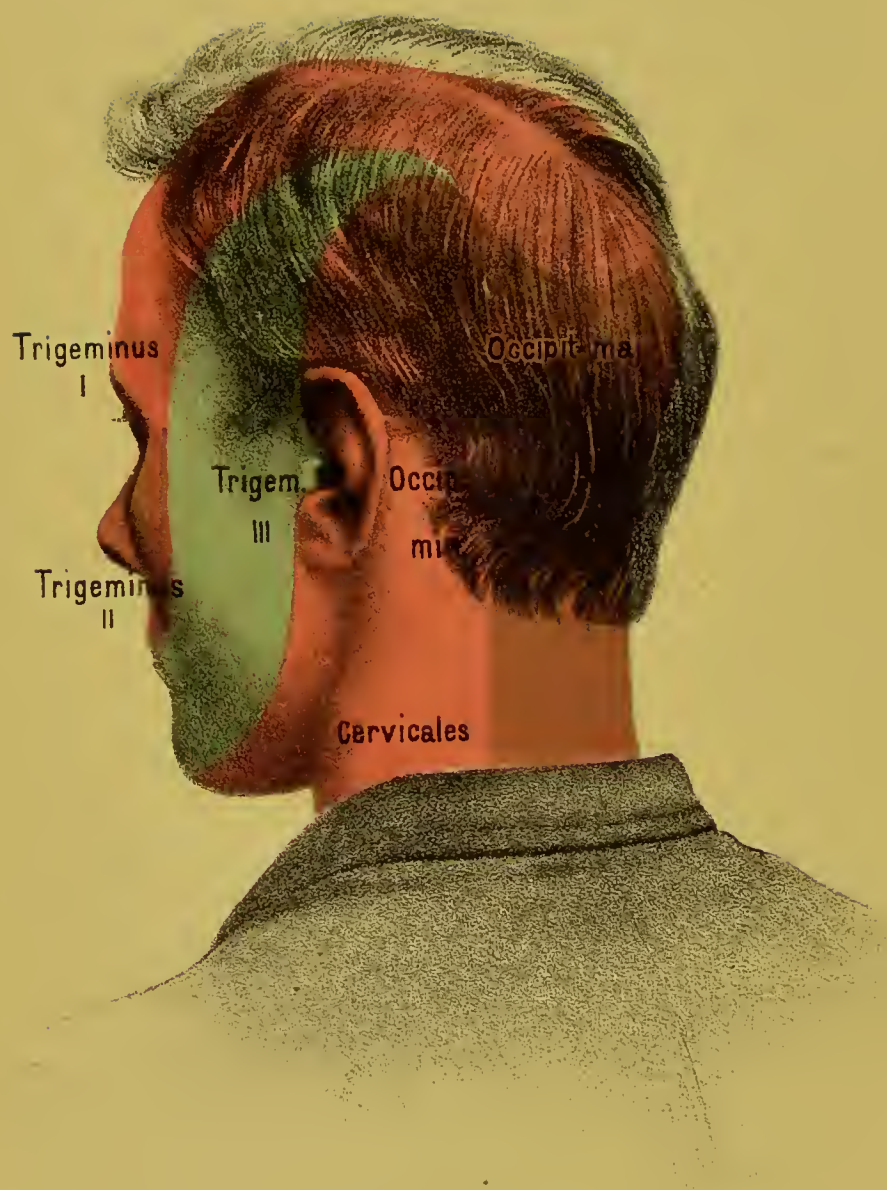


PLATE IV.

The head-posterior view.

THE posterior surface of the head is supplied by the **upper cervical nerves**.

The **small occipital**, arising from the anterior division of the second cervical nerve, supplies the skin behind the ear, and this area is directed in a pointed shape towards the crown of the head.

The **great occipital**, representing the posterior branch of the second cervical nerve, supplies the skin corresponding with the upper part of the occipital bone and adjoining a part of the scalp which is marked in the Plate as extending towards the vertex.

The **anterior cervical** nerves supply the skin of the front of the neck, while the surface of the back of the neck is supplied by the posterior cervical nerves.

Note.—There is also found a branch of the posterior division of the **third cervical nerve** ramifying in the skin above the occipital protuberance.

The **pneumogastric**, by its auricular branch, appears cutaneously behind the ear.

SYNONYMS.

N. occipitalis minor. N. occipitalis parvus. N. occipitalis externus. N. occipitalis anterior.

N. occipitalis major. N. occipitalis magnus. N. occipitalis maximus. N. occipitalis internus.



PLATE V.

The anterior surface of the left arm.

THE skin of the top of the shoulder is supplied with sensory nerves from the **supra-clavicular** branches of the cervical plexus.

The anterior surface of the upper arm possesses nerves from two sources :

The **circumflex (axillaris)**, supplying the outer side.

The **median**, by its cutaneous branches (**cutan. medial.**), the inner side. The line of demarcation between these two nerves runs vertically down the middle of the biceps.

On the front of the fore-arm the line of demarcation similarly runs vertically down the middle : and here also we find two sources of nerve supply :

The **external cutaneous (cutaneus lateralis)**, a branch of the musculo-cutaneous, occupies the outer half ; the **internal cutaneous (cutan. medius)**, the inner half.

Towards the wrist are found two small nerves, the **palmar cutaneous** of the **median (palm. med.)** and the **palmar cutaneous** of the **ulnar**.

No such small nerves are found on the posterior surface of the fore-arm, but, on the contrary, the three nerves which supply the fore-arm run on to the hand.

Note.—The **intercosto-humeral**, or nerve of **Wrisberg**, is distributed with the lesser internal cutaneous to the skin on the inner side of the upper arm. These are represented by the area marked **cutan. medial**.

SYNONYMS.

Nn. supra-claviculares. Nn. supra-sternales. Nn. supra-acromiales.

N. circumflexus. N. axillaris. N. articularis humeri.

N. cutaneus medialis. N. cutaneus internus minor. N. cutaneus internus. N. accessorius cutanei interni. N. of Wrisberg. N. intercosto-humeralis.

N. cutaneus medius. **N. cutaneus internus.** **N. cutaneus internus major.**

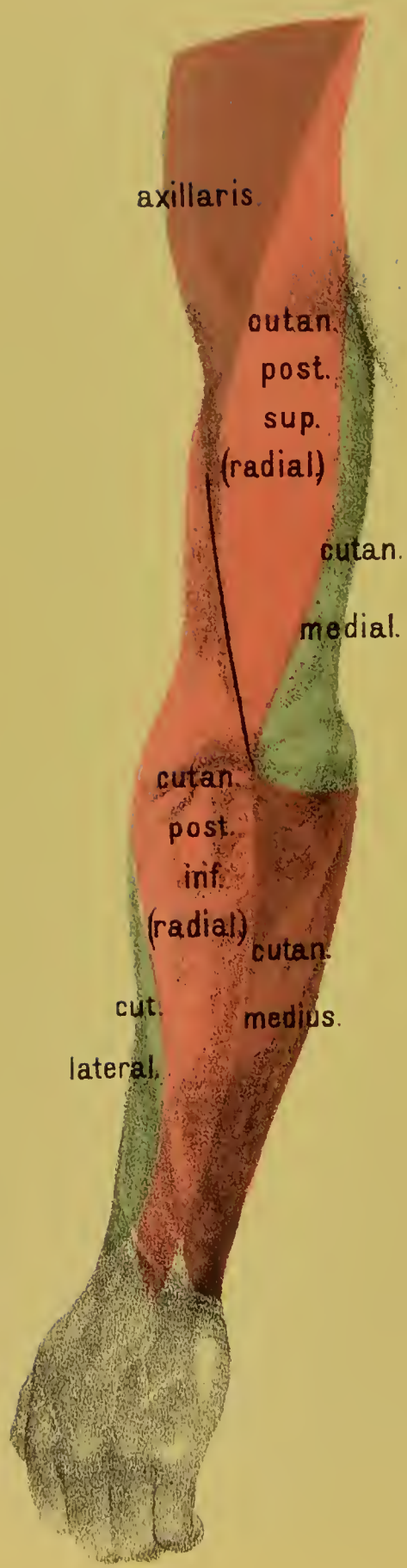
N. cutaneus lateralis. **N. cutaneus externus.** **N. musculo-cutaneus.** **N. perforans Casserii.** **Ramus magnus nervi mediani.** **N. coraco-brachialis.**

N. ulnaris. **N. cubitalis.**

N. radialis. **N. musculo-spiralis.** **N. spiralis.**

N. cutaneus palmaris. **N. cutaneus palmaris longus.** **N. cutaneus palmaris antibrachii.**

N. palmaris ulnaris. **Ramus palmaris longus ulnaris.** **R. palmaris longus.** **R. cutaneus palmaris nervi ulnaris.**



axillaris.

cutan.
post.
sup.
(radial)

cutan.
medial.

cutan.
post.
inf.
(radial)

cutan.
medius.

cut.
lateral.

PLATE VI.

The posterior surface of the left arm.

WHILE the anterior surface of the whole upper extremity possesses two main nerve supplies, three are found on the posterior surface :

The **circumflex** (**N. axillaris**) is distributed to the outer side of the upper arm.

The **internal cutaneous** of the brachial plexus (**N. cutan. medialis**) occupies the inner aspect.

The upper cutaneous branches of the **musculo-spiral** (**N. cutaneus post. super. (radial)**) are interposed between the two.

On the fore-arm there are also three nerves distributed cutaneously on the length of the limb :

The **musculo-cutaneous** (**cutaneus lateralis**) sends branches on the radial or outer side.

The **internal cutaneous** by its posterior branch (**cutaneus medius**) occupies the ulnar or inner surface.

The lower cutaneous of the **musculo-spiral** (**cutaneus post. inf. radial**) supplies the middle of the posterior aspect of the fore-arm.

In order to indicate the identity of origin from the musculo-spiral, the posterior cutaneus superior and inferior (radial) have their areas of distribution indicated by the same colour, with only a broad black line to show the limit between the two.

Note.—By comparison with Plate II. it will be seen that the **supra-clavicular** branches of the cervical plexus extend rather more on the deltoid posteriorly than this Plate would indicate.

SYNONYMS.

N. axillaris. **N. circumflexus.** **N. articularis humeri.**

N. cutaneus medialis. **N. cutaneus internus.** **N. accessorius nervi cutanei interni.** **N. cutaneus internus minor.**

N. cutaneus posterior superior. R. cutaneus brachii internus nervi radialis. N. cutaneus brachii posterior medius. R. cutaneus internus.

N. cutaneus posterior inferior. N. cutaneus externus nervi radialis. N. cutaneus externus superior. N. cutaneus externus s. medius antibrachii. N. superficialis dorsalis radialis cutaneus.

N. cutaneus lateralis. N. musculo-cutaneus. N. perforans Casserii. N. coraco-brachialis. R. magnus nervi mediani.

N. cutaneus medius. N. cutaneus internus. N. cutaneus internus major.

N. ulnaris. N. cubitalis.

N. radialis. N. musculo-spiralis. N. spiralis.



PLATE VII.

The front and back of the hand.

ON the hand are found three nerve distributions :

(1) The **median** supplies the larger half of the palmar surface, including the thumb and the next two and a half fingers, and the limit is indicated by a vertical line from the wrist to the tip of the fourth or ring-finger. The outer border of the hand forms the limit in that direction. (In the upper figure may be noticed a small area by the tip of the middle and ring fingers, indicating the distribution of the **radial**.)

The median also supplies to a small extent parts of the ends of the first four fingers on the dorsal surface.

(2) The **ulnar** gives the cutaneous branches to that side of the palm as far as the middle line—one and a half fingers. The distribution of the nerve extends to the dorsal surface and includes as far as the middle line.

The lower plate shows that the ends of the fourth and fifth fingers on their posterior aspect receive cutaneous filaments from the palmar branches of the ulnar, in addition to the palmar branches of the median.

(3) The **radial** supplies the skin of the outer half of the dorsal surface, with the exception of the tips of the first, second, and third fingers.

Note.—The digital nerves from the palmar surface supply both front and back of the ends of the fingers. The posterior branch joins with the dorsal digital nerve, but is usually larger than it, and thus the nails are supplied. The branches of the median are shown in the lower Plate to supply the dorsum of the outer three and a half fingers more distinctly than the palmar branches of the ulnar are seen on their corresponding fingers.

SYNONYMS.

N. ulnaris. N. cubitalis.

N. radialis. N. musculo-spiralis. N. spiralis.

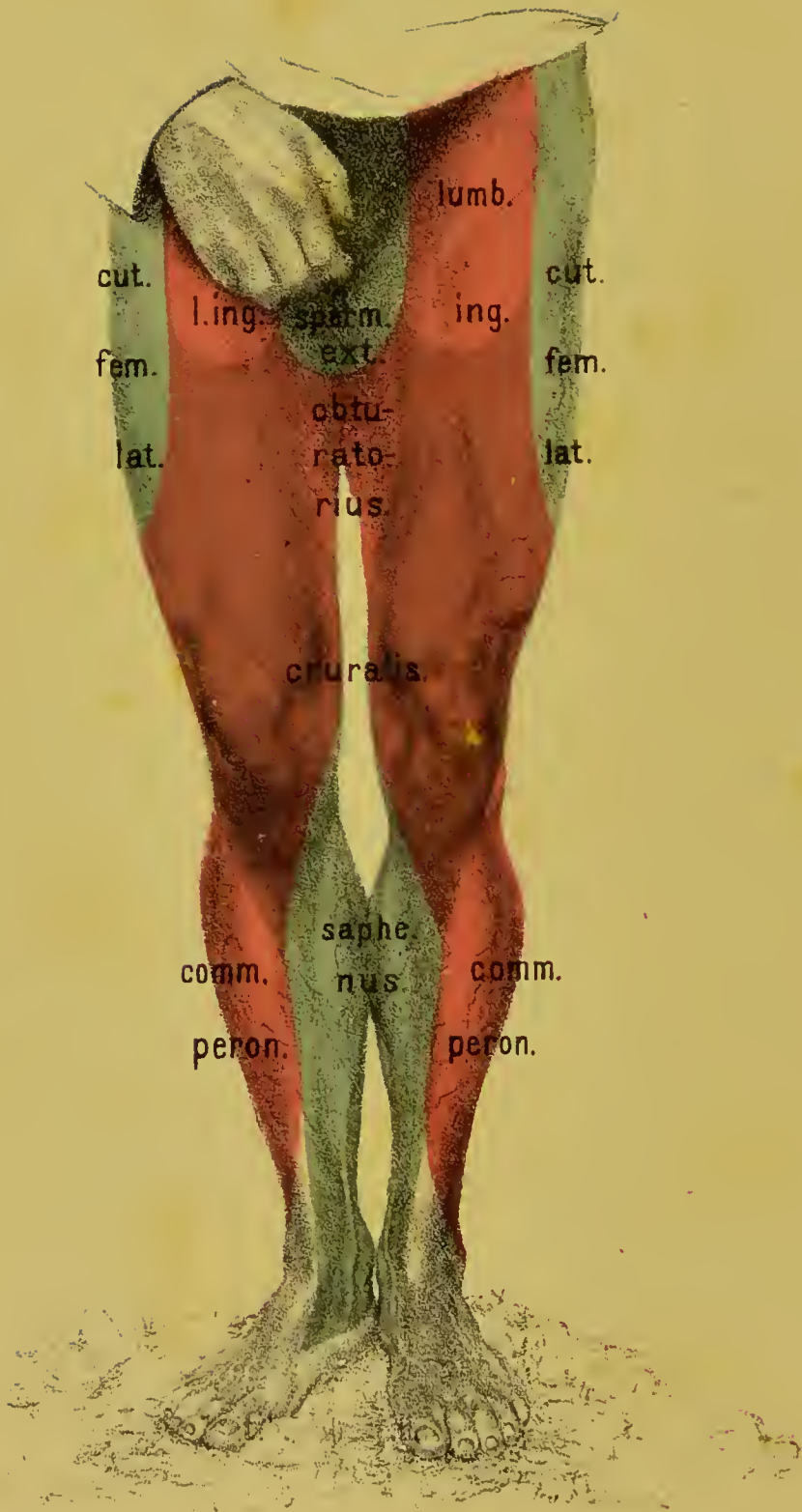


PLATE VIII.

The anterior surface of the lower extremity.

At the upper part are found three nerves :

- (1) The **external cutaneous (cut. fem. lateralis)**.
- (2) The **crural branch of the genito-crural (lumbo-inguinal)**.
- (3) The **genital branch of the genito-crural (sperm. externus)**.
- (4) The **anterior crural** supplies the greater part of the anterior surface of the thigh, and as far as to below the patella by the middle and internal cutaneous branches.

On the inner aspect are found the cutaneous distribution of

- (1) The **obturator**, which extends even further downward behind the thigh than on the inner side.
- (2) The **long or internal saphenous** supplies the inner side of the leg and foot.

The **communicans peronei** is distributed to the outer aspect of the leg.

Note.—On the outer aspect of the leg are the cutaneous branches of the **external popliteal nerve**, and not necessarily from the **communicans peronei**, as we consider, but the source is the same, whichever way we take it.

Below the coloured areas in the front of the ankle in this Plate is the cutaneous distribution of the **musculo-cutaneous**, a branch of the external popliteal.

Over the patellar region is found the **plexus** formed by branches of the **anterior crural** (as indicated) and of the **long saphenous obturator**, and sometimes of the **external popliteal**, and on the inner side above the level of the knee the **plexus** formed by the interlacement of the **obturator internal cutaneous** and **long saphenous**.

SYNONYMS.

N. cutaneus femoris lateralis. **N. cutaneus externus.**
N. cutaneus anterior externus. N. inguinalis externus. N.
femoro-cutaneus.

- N. lumbo-inguinalis.** **R. cruralis nervi genito-cruralis.**
 N. inguinalis. R. ext. s. femoralis cutaneus nervi inguinalis interni.
- N. spermaticus externus.** **R. genitalis nervi genito-cruralis.** N. pudendus externus. R. scrotalis s. internus nervi inguinalis interni.
- N. cruralis.** **N. cruralis anterior.** N. femoralis.
- N. obturatorius.** N. cruralis internus. N. cruralis posterior.
- N. saphenus.** **N. saphenus internus s. major.** N. cutaneus internus femoris major.
- N. communicans peroneus.** **N. communicans fibularis.**
 N. cutaneus cruris posterior lateralis s. externus. N. saphenus peroneus. N. accessorius sapheni ext. R. externus nervi sapheni externi.
- N. peroneus.** **N. musculo-cutaneus posterior externus.** N. popliteus externus. N. fibularis.

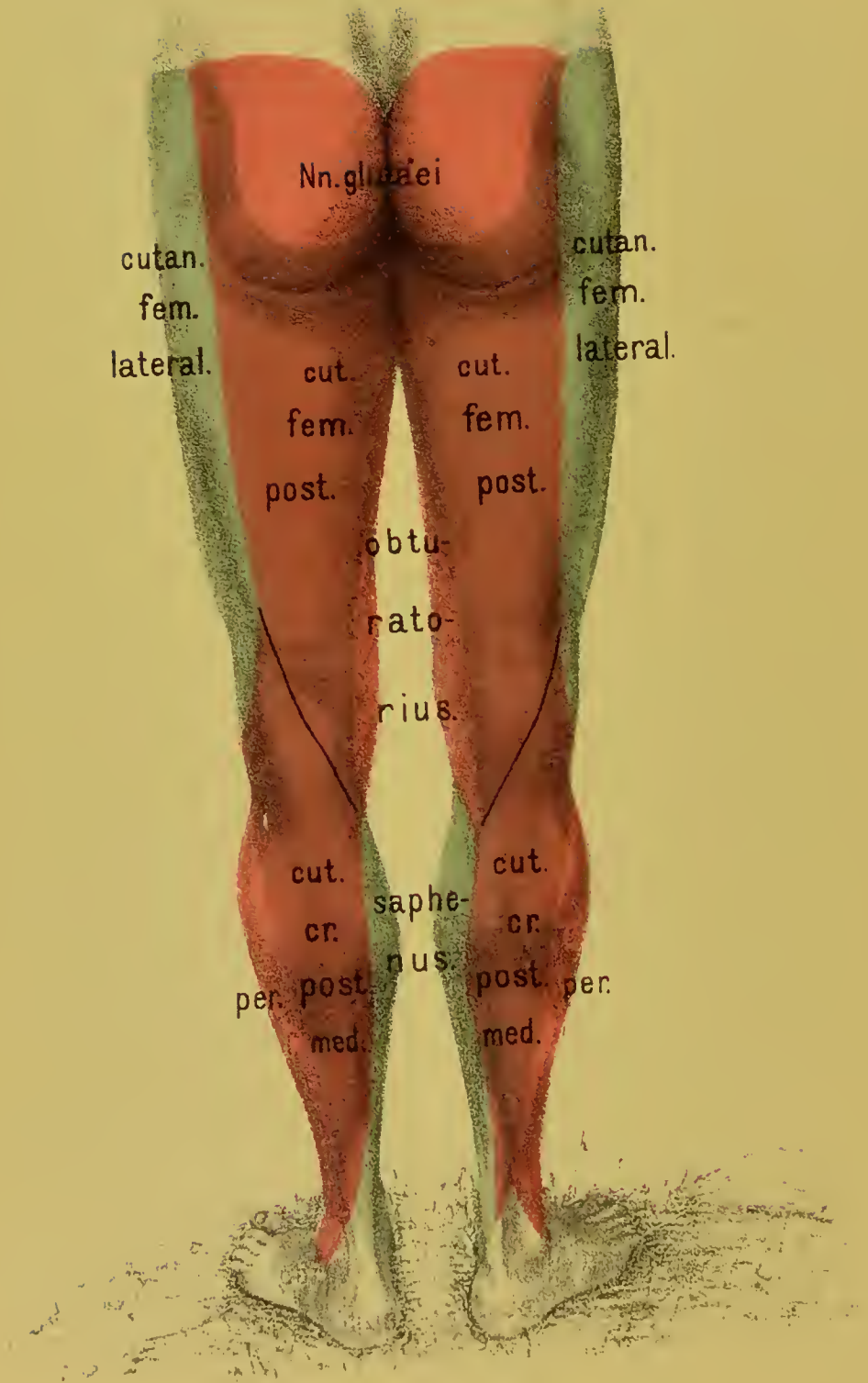


PLATE IX.

The posterior surface of the lower extremity.

ON the nates are seen the branches of the **gluteal** nerves, but their distribution does not correspond with the outline of either the nates or of the *gluteus maximus*.

On the thigh are found three nerve areas :

- (1) The **obturator**.
- (2) The **posterior cutaneous** branches from the **small sciatic** (**cutan. femoris post.**)
- (3) The **external cutaneous** from the lumbar plexus (**cutan. femoris lateralis**).

On the leg are three nerve areas :

- (1) The **internal** or **long saphenous** (**saphenus**).
- (2) The **posterior middle cutaneous** (**cut. cr. post. med.**)
- (3) The **communicans peronei**.

The areas of both of the posterior cutaneous nerves (of the thigh and leg) are depicted in the same colour, and the limit of these areas is marked only by a broad black line, because the two nerves very frequently are conjoined.

Note.—Above the outer side of the buttock are found branches of the **last dorsal** as low down as the great trochanter. The **ilio-hypogastric** and **ilio-inguinal** also send filaments to the outer and upper part.

The area marked (**N. glutæi**) is occupied by **small sciatic** branches almost entirely, but some filaments of the sacral nerves are found by the side of the sacrum and coccyx, and the inferior gluteal of the small sciatic is usually represented as occupying about the lower half of the buttock.

The small sciatic gives the chief branches (**cut. fem. post.**) also to the back of the thigh. The **inferior pudendal** from the small sciatic is one of the nerves on this aspect at the upper and inner part of the thigh.

The area marked (**obturator**) is often supplied by the **internal cutaneous**.

On the calf, the small sciatic nerve generally joins with the **short saphenous** or **communicans tibialis**, the cutaneous branch of the internal popliteal. The name short saphenous, however, is often limited to the nerve formed by the junction of the comm. tibialis and comm. peronei. The coloured area marked (**cut. cr. post. med.**) indicates chiefly, then, that of the branches of the small sciatic and the comm. tibialis.

The **internal cutaneous** joins with the **long saphenous** in supplying the upper part of the calf.

SYNONYMS.

- N. glutæus inferior.** **N. ischiadicus minor.**
N. obturatorius. **N. cruralis internus.** **N. cruralis posterior.**
N. cutaneus femoris posterior. **N. cutaneus posterior medius.**
N. cutaneus posterior magnus. **N. cutaneus posterior communis.** **N. cutaneus glut. infer.**
N. cutaneus femoris lateralis. **N. cutaneus externus.**
N. cutaneus anterior externus. **N. inguinalis externus.** **N. femoro-cutaneus.**
N. saphenus. **N. saphenus internus s. major.** **N. cutaneus femoris internus major.**
N. communicans peroneus: **N. comm. fibularis.** **N. cutaneus cruris posterior lateralis.** **N. cutaneus posterior externus.**
N. saphenus peroneus. **N. accessorius sapheni externi.**
Radix externus nervi sapheni externi.

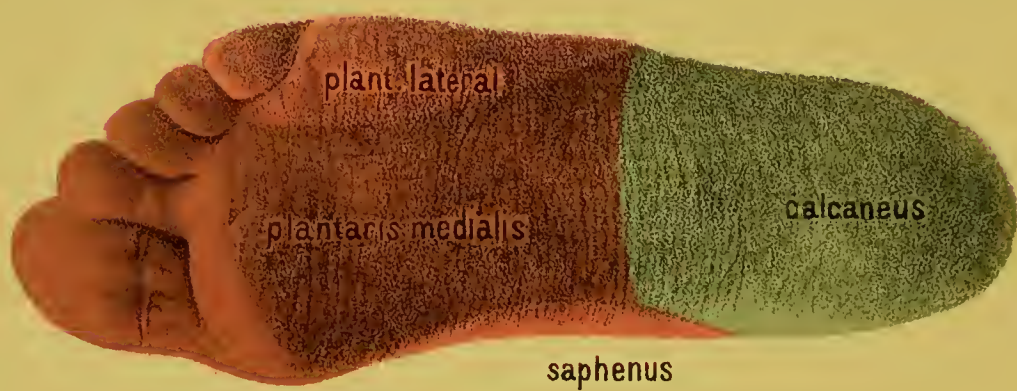
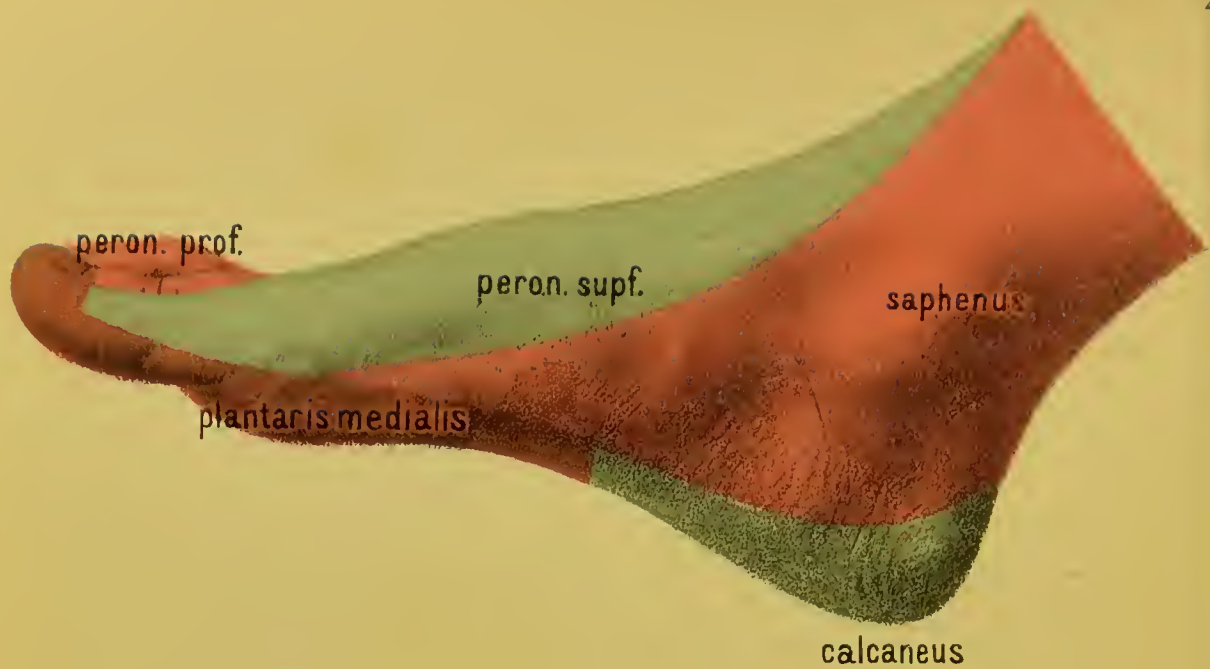


PLATE X.

The foot seen from the inner side, below, and from the outer side:

ON the foot are three large nerve areas, namely :

From the **internal or long saphenous**, from the musculo-cutaneous or peroneal, and from the posterior tibial, which, between them, are distributed to the skin in the following manner—

(1) The **internal saphenous** on the surface of the inner ankle and the inner border of the foot.

(2) The **musculo-cutaneous (peroneus superficialis)** on the dorsum of the foot and the outer border.

(3) The **posterior tibial (plant. med., plant. later., and calcaneus)** on the sole, and to the dorsal aspect also of the tips of the toes.

On the adjoining sides of the great toe and second toe appears the small area of the **anterior tibial (peroneus prof.)**

The middle line of the toes indicates the limit of cutaneous distribution of the **internal and external plantar nerves**.

The **sural nerve or short saphenus** sends a small branch to the upper part of the outer side of the foot as far forward as the little toe (as can be seen in the accompanying plate by strong daylight).

Note.—On the dorsum of the foot the **musculo-cutaneous (peroneus superficialis)** and **anterior tibial (peroneus profundus)** are usually described as occupying the ends of the toes, but, as on the hand, the plantar branches of the network of nerves are commonly more important than the dorsal, as is indicated by the colouring of the plates.

SYNONYMS.

N. peroneus. N. fibularis. N. popliteus externus. N. musculo-cutaneus posterior externus.

N. communicans peroneus. N. comm. fibularis. N. cutaneus cruris posterior lateralis. N. cutaneus posterior externus. N. saphenus peroneus. N. accessorius sapheni externus. Radix externa nervi sapheni externi.

- N. peroneus superficialis.** **N. musculo-cutaneus pedis.**
 N. cutaneus anterior. N. cutaneus dorsi pedis communis.
 N. cutaneus peronei.
- N. peroneus profundus.** **N. tibialis anticus.** R. muscularis
 nervi peronei. N. musculo-cutaneus peroneus anterior seu
 interosseus.
- N. tibialis.** **N. tibialis posticus.** N. popliteus internus. N.
 popliteus.
- N. suralis.** **N. saphenus minor s. externus.** N. com-
 municans tibialis. N. communicans suræ. N. cutaneus
 longus posticus tibiæ. N. cutaneus longus cruris et pedis.
 N. cutaneus pedis externus seu tibialis.
- N. calcaneus.** N. cutaneus plantaris proprius. N. cutaneus
 calcis. N. tibialis externus. N. calcaneus internus.
- N. plantaris lateralis.** **N. plantaris externus.**
- N. plantaris medius.** **N. plantaris externus.**
- N. saphenus.** **N. saphenus internus s. major.** N. cutaneus
 internus femoris major.

